

Hydraulics and Pneumatics CTAG Course Learning Outcomes and Alignment Endorsement Survey

Hydraulics and Pneumatics CTAG Course Learning Outcomes

April 5, 2023

Survey Deadline: Wednesday, April 19, 2023

This survey will collect responses from all Ohio Public Institutions of higher education for revisions made to the Hydraulics and Pneumatics CTAG course. As the Hydraulics and Pneumatics CTAG course was being reviewed, our lead faculty expert, Michael Fisch from Kent State University, determined that additional learning outcomes should be added to the existing Hydraulics and Pneumatics CTAG course.

If approved, the CTAG course will continue to enable students who successfully complete an approved Hydraulics and Pneumatics course at an Ohio public high school or career center to obtain a guarantee that college credit will be awarded upon matriculation to an Ohio public college or university that has a comparable course.

Please note that if your institution has a similar course, it will be required to submit it for statewide articulation. As you complete the survey, please consider the need for a statewide set of learning outcomes and how your course aligns to the added proposed statewide learning outcomes.

We ask that **one representative** from each institution complete this survey as soon as possible, but **no later than Wednesday, April 19, 2023**.

If you have questions regarding this survey, please contact:

Lisa Holstrom
Senior Associate Director, SCTAI
Ohio Department of Higher Education
lholstrom@highered.ohio.gov

*** 1. Please provide Information about the person completing this survey on behalf of your institution.**

Name

Institution

Department

Title

E-mail

Phone

*** 2. Please indicate the type of institution that you represent.**

- ☐ University
- ☐ Regional Campus
- ☐ Community College

*** 3. Does your institution offer a Hydraulics and Pneumatics course or program?**

- ☐ Yes
- ☐ No



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Hydraulics and Pneumatics Learning Outcome Additions

*** 4. Below is information about the current course description and current learning outcomes. The proposed revised course description and new learning outcomes follow. Please note that redundancy in learning outcomes was intentional; separating hydraulics outcomes and pneumatics outcomes will facilitate future credential alignment.**

CURRENT COURSE DESCRIPTION: This course focuses on skills and technologies essential for students to learn physical principles of hydraulics. They will diagnose problems, test system components, properly maintain hydraulic circuits and diagnose and test problem areas in these systems in agricultural and industrial power equipment.

CURRENT CREDIT HOURS: 2

CURRENT LEARNING OUTCOMES:

1. Understand and identify the dangers associated with fluids under high pressure and follow all safety practices.
2. Describe the principles of power hydraulics.
3. Identify and explain the function of each component of a hydraulic system.
4. Use hydraulic schematics to analyze, diagnose, test, and troubleshoot.
5. Develop a preventative maintenance program for a hydraulic system.

REVISED COURSE DESCRIPTION: This course focuses on skills and technologies essential for students to learn physical principles of hydraulics and pneumatics. They will diagnose problems, test system components, properly maintain hydraulic and pneumatic circuits and diagnose and test problem areas in these systems in agricultural and industrial power equipment.

PROPOSED CREDIT HOURS: 3

PROPOSED LEARNING OUTCOME ADDITIONS:

6. Demonstrate the communication skills necessary and relevant to explaining a hydraulics system to others.
7. Understand and identify the dangers associated with gases under high pressure and very low pressure and follow all safety practices.
8. Describe and apply the principles of pneumatic system design.
9. Identify, explain, and analyze the function of the components of pneumatic systems.
10. Use pneumatic schematics to build, analyze, diagnose, test, repair, rebuild and troubleshoot pneumatics circuits as necessary.
11. Develop a preventative maintenance program for a pneumatic system.
12. Demonstrate the communication skills necessary and relevant to explaining a pneumatic system to others.

*Does your institution offer one or more courses that cover similar content as outlined in the CTAG learning outcomes above?

☐ Yes

☐ No

If yes, provide the name of the course (ex: BIO101 Biological Sciences).

* 5. Do you endorse the added learning outcomes?

☐ Yes

☐ No

If not, please explain your concerns.

* 6. With the addition of these learning outcomes, do you agree that 3 semester hours is the appropriate amount of credit?

☐ Yes

☐ No

If not, please explain your concerns.



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Hydraulics and Pneumatics Learning Outcome Additions

*** 7. For the updated CTAG course in Hydraulics and Pneumatics, please indicate next to each new learning outcome listed below whether you believe that it should be included and whether it is an essential learning outcome.**

	Yes, and should be essential	Yes, but not essential	Not a necessary learning outcome for this course
6. Demonstrate the communication skills necessary and relevant to explaining a hydraulics system to others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Understand and identify the dangers associated with gases under high pressure and very low pressure and follow all safety practices.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Describe and apply the principles of pneumatic system design.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Identify, explain, and analyze the function of the components of pneumatic systems.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Use pneumatic schematics to build, analyze, diagnose, test, repair, rebuild, and troubleshoot pneumatics circuits as necessary.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Develop a preventative maintenance program for a pneumatic system.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Demonstrate the communication skills necessary and relevant to explaining a pneumatics system to others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. Are there changes or comments you would like to make to the learning outcomes for the CTAG course in Hydraulics and Pneumatics? If so, please outline them below.

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Alignment for Hydraulics and Pneumatics Added Learning Outcomes

Please review the alignment between the proposed added post-secondary learning outcomes and the Ohio Department of Education (ODE) secondary career field technical content standards for the Hydraulics and Pneumatics CTAG course.

Proposed Post-Secondary Learning Outcomes	Competencies in ODE Career Field Technical Content Standards
6. Demonstrate the communication skills necessary and relevant to explaining a hydraulic system to others.	1.2.1. Extract relevant, valid information from materials and cite sources of information. 1.2.2. Deliver formal and informal presentations. 1.2.3. Identify and use verbal, <u>nonverbal</u> and active listening skills to communicate effectively. 1.2.5. Communicate information (e.g., directions, ideas, vision, workplace expectations) for an intended audience and purpose. 1.2.6. Use proper grammar and expression in all aspects of communication. 1.2.11. Write professional correspondence, documents, job applications, and résumés.

<p>7. Understand and identify the dangers associated with gases under high pressure and very low pressure and follow all safety practices.</p>	<p>1.12.1. Use Occupational Safety and Health Administration (OSHA) defined procedures for identifying employer and employee responsibilities, working in confined spaces, managing worker safety programs, using ground fault circuit interrupters (GFCIs), maintaining clearance and boundaries and labeling.</p> <p>1.12.2. Interpret safety signs and symbols.</p> <p>1.12.3. Interpret personal safety rights according to the employee Right to Know plan.</p> <p>1.12.4. Describe how working under the influence of drugs and alcohol increases the risk of accident, lowers productivity, raises insurance costs, and reduces profits.</p> <p>1.12.5. Identify the location of emergency flush showers, eyewash fountains, Safety Data Sheets (SDSs), fire alarms and exits.</p> <p>1.12.6. Identify procedures for the handling, storage, and disposal of hazardous materials.</p> <p>1.12.7. Select, use, store, maintain and dispose of personal protective equipment (PPE), appropriate to job tasks, conditions, and materials.</p> <p>1.12.8. Identify safety hazards and take corrective measures.</p> <p>1.12.9. Identify, inspect, and use safety equipment appropriate for the task.</p> <p>1.12.10. Follow established procedures for the administration of first aid and contact emergency medical personnel when necessary.</p> <p>1.12.11. Set up for ergonomic workflow.</p> <p>1.12.12. Apply inspection, rejection criteria, hitch configurations, and load handling practices to slings and rigging hardware.</p> <p>4.1.3. Ensure the presence and functionality of safety systems and hardware.</p> <p>4.1.4. Identify potential hazards and limitations related to the use of equipment.</p> <p>4.1.5. Maintain machinery, equipment, instrument and facility cleanliness, appearance, and safety.</p>
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8. Describe and apply the principles of pneumatic system design	4.7.2 Identify and describe the physical and mechanical principles of mechanical, hydraulic, pneumatic, and electrical power transfer. 4.7.3 Perform calculations involving speed, torque, and power.
9. Identify, explain, and analyze the function of the components of pneumatic systems	14.4.3 Identify and describe the applications and operations of major pneumatic system components. 14.4.4 Identify and describe the features, benefits and applications of the different types of pneumatic systems. 14.4.8 Identify and describe pneumatic fittings and hose by types and sizes per international standard organization
10. Use pneumatic schematics to build, analyze, diagnose, test, repair, rebuild, and troubleshoot pneumatics circuits as necessary	4.14.5 Inspect, test, diagnose, repair, or replace pneumatic systems and components to maintain system integrity. 4.7.7 Test, remove and replace pneumatic components. 4.14.1 Interpret symbols and schematic drawings related to pneumatic system design. 4.14.6 Test and diagnose electronic controls for pneumatic systems. 4.14.9 Measure system flow, pressure, temperature, and dew point.
11. Develop a preventative maintenance program for a pneumatic system.	4.14.7 Identify and describe the pneumatic system contaminates and methods of testing and control. 4.14.9 Measure system flow, pressure, temperature, and dew point.
12. Demonstrate the communication skills necessary and relevant to explaining a pneumatic system to others	1.2.1. Extract relevant, valid information from materials and cite sources of information. 1.2.2. Deliver formal and informal presentations. 1.2.3. Identify and use verbal, nonverbal, and active listening skills to communicate effectively. 1.2.5. Communicate information (e.g., directions, ideas, vision, workplace expectations) for an intended audience and purpose. 1.2.6. Use proper grammar and expression in all aspects of communication. 1.2.11. Write professional correspondence, documents, job applications, and résumés.

* 9. Do you endorse this alignment to the new proposed learning outcomes?

☐ Yes

☐ No

10. Are there any comments that you would like to add regarding the alignment to the proposed learning outcome additions?

Endorsement Survey

Nominations for CTAG Review Panel

We are looking for nominations for a review panel consisting of faculty with expertise in hydraulics and pneumatics from Ohio public colleges and universities. The review panel members will be responsible to evaluate courses that have been submitted by postsecondary institutions and determine if the courses match the established learning outcomes.

If you would like to nominate yourself or another individual from your institution to serve on this panel, please provide the information about that individual as requested below.

11. The following individual is nominated for the Hydraulics and Pneumatics CTAG Review Panel:

Name	<input type="text"/>
Institution	<input type="text"/>
Title	<input type="text"/>
Department	<input type="text"/>
E-mail	<input type="text"/>
Phone	<input type="text"/>



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Thank you!

Thank you for completing this survey.